

IN THE DRAWINGS

Please amend the drawings in the application as follows: Fig. 1 by adding the words "Prior Art" and a lead line from reference character 31 to the "door"; and Fig. 2 by adding the words "Prior Art"; these changes being shown in red on the attached drawing figures. Formal drawings will be submitted upon approval of these changes and issuance of a Notice of Allowance.

IN THE SPECIFICATION

Please replace the title of the invention on Page 1, Line 2 with the following new title:

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METHOD FOR FILLING A MOLD

Please replace the paragraph beginning on Page 5, Line 3, with the following new paragraph:

A) Referring now to Fig. 1, there is illustrated a prior art low pressure countergravity casting apparatus, indicated generally at 10, which can be used in accordance with the teachings of the present invention. Although this invention will be described and illustrated in conjunction with the particular low pressure countergravity casting apparatus 10 disclosed herein, it will be appreciated that this invention may be used in conjunction with other types of casting apparatus. The general structure and operation of the low pressure countergravity casting apparatus 10 is conventional in the art. Thus, only those portions of the low pressure countergravity casting apparatus 10 which are necessary for a full understanding of this invention will be explained and illustrated in detail.

Please replace the paragraph beginning on Page 5, Line 3, with the following new paragraph:

A2 Referring now to prior art Figure 2, the inlet feed gate 28, the distribution port 90, and the adjacent mold cavity 24 are illustrated containing the molten metal 16. It will be appreciated that the volume V1 of the molten metal 16 in the inlet feed gate 28 is less than the volume V2 of the molten metal 16 in the distribution port 90 and the volume V3 of the molten metal 16 in the mold cavity 24. Thus, as the molten metal 16 passes through the inlet feed gate 28 from the port 90 into the mold cavity 24, turbulence can be produced.

Please replace the paragraph beginning on Page 7, Line 7, with the following new paragraph:

A3 The casting apparatus 10 includes one or more inlet feed gates 28 (only one of such inlet feed gates 28 illustrated in Fig. 1). The inlet feed gates 28 extend generally upwardly from a bottom side 26 of the mold 12 and are operative to establish fluid communication between the mold cavity 24 and the bottom side 26 of the mold 12. The inlet feed gates 28 of the mold 12 are supplied with the molten metal 16 from the casting chamber 46 through a feed tube 76. The inlet feed gates 28 are provided to aid in further processing of the cast article after the cast article has sufficiently cooled.

Please replace the paragraph beginning on Page 13, Line 3, with the following new paragraph:

A4
At about the point 144, the molten metal 16 in the mold 12 “bounces” and creates turbulence in the molten metal 16 in the mold 12, (as also illustrated in prior art Figure 2). The molten metal 16 in the mold 12 reaches a relative peak at about a point 148 of the prior art actual fill profile 116, then drops to a trough at about a point 152. At about the point 152, the molten metal 16 in the mold 12 “bounces,” and creates undesirable turbulence in the molten metal 16 in the mold 12. The molten metal 16 in the mold 12 reaches a relative peak at about a point 156 of the prior art actual fill profile 116, then drops to a trough at about a point 160. At about the point 160, the molten metal 16 in the mold 12 “bounces,” and creates turbulence in the molten metal 16 in the mold 12. It should be noted that, though three troughs, the point 144, the point 152, and the point 160 are shown and discussed, the actual fill profile 116 may include a different number of troughs in stage 2.

Please replace the paragraph beginning on Page 13, Line 16, with the following new paragraph:

A5
It will be appreciated that as the illustrated prior art actual fill profile 116 begins stage 3 at about the time t_2 , the prior art actual fill profile 116 about approximates the prior art desired fill profile 112 at about a point 164 of the actual fill profile 116. At about a point 172 of the prior art desired fill profile 112, the pressure of the prior art actual fill profile 116 is less than that of the prior art desired fill profile 112. The controller 54 compensates at about a point 172 by increasing the amount of fluid being added to the casting chamber 46. The amount of fluid being added to the casting chamber 46 is adjusted by the controller 54 such that the pressure of the prior art actual fill profile 116 is about the same as the pressure of the prior art desired fill profile 112 at the end of stage 3 at time t_3 .

Please replace the paragraph beginning on Page 13, Line 16, with the following new paragraph:

21 The illustrated desired fill profile 304 can be divided into one or more filling stages, each filling stage corresponding to a selected time interval. Stage 1 of the desired fill profile 304 is illustrated. It should be understood that the invention may be practiced at any suitable stage of the desired fill profile 304. Between the time t_1 and the time t_2 , the desired fill profile 304 indicates that the molten metal 16 is optimally moved at a first rate of pressure. Between the time t_2 and the time t_3 , the desired fill profile 304 indicates that the molten metal 16 is optimally moved at a second rate of pressure. Between the time t_3 and the time t_4 , the desired fill profile 304 indicates that the molten metal 16 is optimally moved at a third rate of pressure. It will be appreciated that a dotted line 308 is shown and is representative of how the molten metal 16 is moved at the first rate of pressure, if the desired fill profile 304 does not change at the time t_2 . The dotted line is approximately collinear with the portion of the desired fill profile 304 between the time t_1 and the time t_2 .